appear 18–20 months before the pollination period, and the ovules are formed late during the season preceding pollination; the single archesporial cell produces four distinct megaspores; an antipodal tissue of a considerable number of cells with large nuclei is developed; endosperm formation begins with free nuclear division, and this is followed by a walled-tissue which fills the embryo sac and encroaches upon the integuments and the chalaza; a filamentous proembryo (2 or 4 cells) becomes club-shaped to ovoid, and a short suspensor of several rows of cells is differentiated from the usual monocotyledonous embryo; in its growth the embryo completely destroys the endosperm and all other ovular structures, and comes to lie naked in the cavity of the ovary, so that there are no seeds in the ordinary sense.—J. M. C.

Morphology of Caulophyllum.—The seed and seedling of *Caulophyllum thalictroides* have been studied by BUTTERS,[16] with the following results: the fleshy testa incloses a very hard endosperm, which has almost completely destroyed the inner integument; the proembryo is massive and pear-shaped and the cotyledons appear late; the first season's growth after germination is usually entirely subterranean, the cotyledons together forming an effective haustorium; the first leaves are usually scalelike and inclose a winter bud; each cotyledon sends three vascular bundles into the hypocotyl, which finally form a tetrarch root; secondary thickening takes place in the hypocotyl, resulting in the formation of a continuous zone of xylem about the pith.—J. M. C.

Temperature and locomotion.—TEODORESCO reports[17] movements in certain organisms at temperatures far lower than have heretofore been recorded. Thus he found zoospores of Dunaliella motile down to temperatures of −17° to −22°.5 C., and others at −5° to −12°.7 C. The limits vary with species and even with individuals. There seems to be much more activity in winter, even among freshwater organisms, than has been supposed.—C. R. B.

Carbon monoxid.—KRASCHÉNNIKOFF, after a careful series of experiments, reports[18] that CO cannot be used by green plants to form carbohydrate. The view of BOTTOMLEY AND JACKSON,[19] which was really not adequately supported by their experiments, the only ones interpreted in favor of such use, is distinctly negatived.—C. R. B.

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[16] BUTTERS, FREDERIC K., The seeds and seedling of *Caulophyllum thalictroides*. Minn. Bot. Studies **4**[1]:11–32. *pls. 4–10.* 1909.

[17] TEODORESCO, E. C., Recherches sur les mouvements de locomotion der organismes inférieurs aux basses températures. Ann. Sci. Nat. Bot. IX. **9**:231–274. 1909.

[18] KRASCHÉNNIKOFF T., La plante verte assimile-t-elle l'oxyde de carbone? Rev. Gén. Bot. **21**:177–193. *pl. 10.* 1909.

[19] Proc. Roy. Soc. Lond. **72**:130–131. 1903.